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U.S. DISTRICT COURT

IN THE UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF TEXAS
BEAUMONT DIVISION

2004 MAR 15 PM 4: 54
TX EASTERN-BEAUMONT

BY Ym Perez

LYONDELL CHEMICAL COMPANY, §
and ATLANTIC RICHFIELD COMPANY §
et al., §
Plaintiffs, §

CIVIL ACTION NO. 01:01-CV-890

Consolidated with 01:02-CV-003

Consolidated with 1:03-CV-0225

Judge Howell Cobb

ALBEMARLE CORPORATION, *et al.*, §
Defendants. §

**JOINT RESPONSE OF AK STEEL CORPORATION, BAYER CROPSCIENCE, INC.,
AND THE LUBRIZOL CORPORATION TO EL PASO PARTIES'
MOTION TO EXCLUDE EXPERTS' REPORTS AND TESTIMONY**

Come now, Defendants AK Steel Corporation ("AK Steel"), Bayer CropScience, Inc. ("Bayer"), and The Lubrizol Corporation ("Lubrizol") and file this response to the El Paso Parties' Motion to Exclude Experts' Reports and Testimony of Bill Chadick and Jess McAngus ("Chadick and McAngus reports").

I. Introduction

The El Paso Parties ("El Paso") misconstrue the Chadick and McAngus reports and invent nonexistent limitations in an effort to have these reports excluded from this case. When the Chadick and McAngus reports are read in conjunction with the other reports simultaneously filed by AK Steel, Bayer, and Lubrizol,¹ those reports explain which parties should be allocated responsibility for the cleanup costs for the Turtle Bayou site and why. They are, therefore, perfectly appropriate allocation reports and should not be excluded under controlling law or this

¹ See Expert Reports of Dr. Davis Ford and Mr. Bob Zoch, attached as Exhibits A and B, respectively. Only the relevant information in the exhibits is included. Local Rule CV-7(b). Because all counsel have been previously served with all of the Exhibits in this Response, the service copies provided to counsel do not include the Exhibits.

Court's Scheduling Orders. It is telling that El Paso did not cite to one source, legal or otherwise, as support for their argument that an allocation report must be excluded if it does not include some magic language concocted by El Paso or includes what El Paso deems to be "defensive" information. Rather, the authority is incontrovertible that the purpose of allocation expert reports is to aid the court in making an allocation of liability for past and future response costs (i.e., cleanup costs). Since both the Chadick and McAngus reports accomplish this purpose, they should not be excluded.

II. Background

To divide the costs of the common defense work in this action, AK Steel, Bayer, and Lubrizol are members of a joint defense group with thirteen other defendants and third-party defendants. Common defense work in a Superfund case largely consists of work on discovery matters of common interest and the retaining of expert witnesses to testify regarding common issues, such as site conditions or, possibly, allocation issues.² However, because each party of the joint defense group has a unique set of facts associated with its own facilities, it is difficult (if not sometimes impossible) to draft an all-inclusive allocation report for the joint defense group. Therefore, AK Steel, Bayer, and Lubrizol have filed three separate allocation reports each. Two of these reports were authored by expert witnesses retained by the joint defense group (Dr. Davis Ford and Mr. Bob Zoch) and are not subject to this motion. AK Steel, Bayer, and Lubrizol also filed individual reports authored by Messrs. Chadick and McAngus,³ which are limited to company-specific issues. As discovery progresses,⁴ these reports may have to be amended.

² Having a common allocation opinion depends solely upon the facts of the case. The facts in this case are amenable to the type of common allocation report filed because there are essentially two parties, El Paso and the Plaintiffs, that are responsible for almost all, if not all, of the liability in this case.

³ For clarity, Mr. Chadick authored the reports for AK Steel and Lubrizol, and Mr. McAngus authored the report for Bayer.

⁴ When the Chadick and McAngus reports were filed, less than ten depositions had been taken. The parties currently estimate that over forty depositions will be taken from now until the end of discovery. Many of these depositions

A. The Allocation Reports

After looking at the documentary evidence, deposition testimony, and chemical evidence (fingerprinting),⁵ Dr. Ford concluded that “All of the chemical constituents of concern detected above background levels in the Turtle Bayou groundwater can be linked to those waste products generated by Tenneco [El Paso] and/or the ARCO plants [Plaintiffs].” *See, e.g.*, Exhibit A at 20-21 (emphasis added). Further, Dr. Ford also concluded that “past and future costs should be allocated to the Tenneco [El Paso] and Arco [Plaintiffs] plants.” *Id.*

Mr. Zoch reached a similar conclusion. Specifically, Mr. Zoch found that because of the volumes and types of waste brought from the El Paso and Plaintiffs’ facilities to the Turtle Bayou site, El Paso and the Plaintiffs are the only generator (arranger) parties that should be allocated cleanup costs responsibility. *See* Exhibit B at 15-16. Mr. Zoch also found that the volume of waste and the primary contaminants at the Turtle Bayou Site could be attributed to four plants, all operated by either El Paso or Plaintiffs. *Id.* at 5-8. Mr. Zoch opined that if any additional alleged generator Defendants are found liable in this litigation, they should equitably be accorded only *de minimus* responsibility, if any.⁶ *Id.* at 16.

The Ford and Zoch reports clearly identify and explain the facts that show why El Paso and the Plaintiffs are liable for the vast majority, and likely all, of the contamination at the site. However, because of the dearth of documentation and testimonial evidence, it was impossible for Dr. Ford and Mr. Zoch to determine conclusively that El Paso and the Plaintiffs were responsible for every molecule of contamination at Turtle Bayou. Therefore, AK Steel, Bayer, and Lubrizol

may have an impact on the opinions of these experts, which may need to be amended. Furthermore, the Plaintiffs have a deadline of March 15, 2004 in the Fourth Amended Scheduling Order to file an expert report to replace the report of Dr. Hairston, who is terminally ill. Messrs. Zoch, Chadick, and McAngus and Dr. Ford may file new reports in response by the April 15, 2004 deadline. Thus, even if the reports were excluded as El Paso requests, they could simply be re-filed in response to Plaintiffs’ new expert report.

⁵ There are certain unique contaminants that can only be attributable to El Paso and the Plaintiffs. Exhibit A at 3, 20-21 and Exhibit B at 13, 16.

⁶ Mr. Zoch included other relevant opinions, but they are outside the scope of this response.

filed the Chadick and McAngus reports, which explain why AK Steel, Bayer, and Lubrizol are not responsible for any of it and should be given a zero allocation. Admittedly, none of these three reports use El Paso's magic "allocation" language, but when read with the Ford and Zoch reports, the reports clearly explain why El Paso and the Plaintiffs should be allocated full responsibility for cleaning up the Turtle Bayou Site and why AK Steel, Bayer, and Lubrizol should be allocated zero responsibility. Simply stated, the reports address issues of allocation of remediation liability. None of them should be excluded.

B. The Court's Scheduling Orders

The Court's Third Amended Scheduling Order provided that expert reports other than those dealing with allocation issues had to be disclosed by December 19, 2003. On that date, AK Steel, Bayer, and Lubrizol filed joint defense expert reports for Bruce Arendale (an accounting expert), Wayne Grip (a photo interpretation expert), Michael Wild (a report regarding the data from the site), and Bob Zoch (a report dealing with El Paso). AK Steel, Bayer, and Lubrizol also served Disclosures of Expert Witnesses, in which all parties were notified that Messrs. Chadick and McAngus would "testify regarding the allocation of the percentage of responsibility of the parties, including but not limited to [AK Steel, Bayer, and Lubrizol]." *See* Exhibits C, D, and E.⁷ The only members of the joint defense group that served independent expert reports on December 19, 2003 were Exxon Mobil, GATX, Goodyear, and J.M. Huber. Thus, El Paso's insinuation that AK Steel, Bayer, and Lubrizol were somehow unique by not filing independent expert reports is patently false. *See* El Paso Motion at 1. The central reason why the majority of

⁷ When filing this disclosure, AK Steel, Bayer, and Lubrizol did not know what Dr. Ford and Mr. Zoch were going to conclude regarding the allocation of liability. This is why they reserved the possibility for Messrs. Chadick and McAngus to perform a full allocation "of the parties." After Dr. Ford and Mr. Zoch conducted their thorough analyses and wrote their reports, there was no need for Messrs. Chadick or McAngus to perform a full-blown analysis or present cumulative testimony. This is why Messrs. Chadick and McAngus limited their analysis and opinions to the appropriateness of a no liability, zero allocation of cleanup responsibility for AK Steel, Bayer, and Lubrizol—issues not specifically addressed in the Ford and Zoch reports.

the defendants did not file additional expert reports on December 19, 2003 is that there was (and is) no concrete evidence connecting any of them to the Turtle Bayou site susceptible of expert rebuttal. These parties, including AK Steel, Bayer, and Lubrizol, are in this case solely because of questionable, conflicting, and/or contradicted witness testimony. Such evidence can only be refuted by expert reports in the unusual circumstance.

The Third Amended Scheduling Order required allocation expert report to be filed on January 30, 2004. AK Steel, Bayer, and Lubrizol filed the Chadick, Ford, McAngus, and Zoch reports on this date. Of the members of the joint defense group that had to issue reports on December 19, 2003, only AK Steel, Bayer, Bezer East, and Lubrizol filed separate allocation reports. Inexplicably, it is these reports that El Paso is attempting to exclude.

III. Law and Argument

A. The Chadick and McAngus Expert Reports Aid the Court in its Allocation of Cleanup Costs

Under Superfund, this Court has broad discretion to allocate the costs associated with cleaning up the Turtle Bayou site. *United States v. Consolidation Coal Co.*, 345 F.3d 409, 413 (6th Cir. 2003). Indeed, this Court can consider any “equitable factors” that it considers “appropriate.” 42 U.S.C. § 9613(f). Therefore, the purpose of reports filed on January 30, 2004, is to help this Court make its allocation—to explain why certain parties should be allocated liability and why. *See, e.g., American Special Risk Ins. Co. v. City of Centerline*, 2002 WL 1480821 at *9 (E.D. Mich).

Allocation of response costs is highly fact-intensive. *See Kalamazoo River Study Group v. Rockwell Int’l Corp.*, 274 F.3d 1043, 1049 (6th Cir. 2001). An expert’s testimony must “‘aid’ the court in understanding the facts” in order to help the court make its allocation. *American Special Risk*, 2002 WL 1480821 at *9. To the extent an expert’s testimony does not aid the court

understanding the facts or state only unsupported opinions, the testimony is subject to being excluded on substantive grounds. *Id.*

The Chadick and McAngus reports show that the experts reviewed the facts (documentary and testimonial) and analyzed whether AK Steel, Bayer, or Lubrizol contributed wastes to the Turtle Bayou site (i.e., whether any should be allocated any percentage of liability). Messrs. Chadick and McAngus ultimately concluded that no waste from AK Steel, Bayer, and Lubrizol was brought to the Turtle Bayou site (thus each should be allocated zero liability for cleanup costs).

The Chadick and McAngus reports are companions to the Ford and Zoch reports filed simultaneously by AK Steel, Bayer, and Lubrizol. Thus, the reports should be read together by the Court to reach the final full allocation opinion that (1) El Paso and the Plaintiffs are responsible for the vast majority, and likely all, of the contamination at the Turtle Bayou site; (2) El Paso and Plaintiffs should be allocated the entire responsibility to clean up the site; and (3) AK Steel, Bayer, and Lubrizol do not have materials at the site, and thus should not be allocated any responsibility.

El Paso argues that “defensive” issues cannot be raised in an allocation report. There is absolutely no support for this position. Indeed, if El Paso’s argument were correct, it would be unlikely that an expert could ever submit a reliable allocation report assigning no responsibility. Under El Paso’s theory, experts would be prohibited from explaining why they allocated no responsibility to their client because the explanation would surely be considered “defensive.” Therefore, the lack of support for the expert’s conclusion—making it unreliable under the Federal Rules of Evidence—could cause it to be excluded if challenged. *See, e.g., Hurst v. U.S.*, 882 F.2d 306, 311 (8th Cir. 1989).

Similarly, there is absolutely no support for El Paso's contention that the word "allocation" must be in Messrs. Chadick's and McAngus's reports. Again, the purpose of these reports is to aid the court in apportioning cleanup cost liability. The Chadick and McAngus reports do this by explaining why AK Steel, Bayer, and Lubrizol do not have any liability.

B. Excluding Testimony is Not Appropriate

Even assuming that El Paso is correct that what it deems to be "defensive" issues cannot be discussed in allocation expert reports, El Paso cannot satisfy the Fifth Circuit's four-part standard to exclude an expert report. *See Barrett v. Atlantic Richfield Co.*, 95 F.3d 375, 380 (5th Cir. 1996). The factors the court considers are: (1) the party's explanation, if any, for failure to comply with the scheduling order; (2) the prejudice to the opposing party of allowing the witness to testify; (3) the possibility of curing such prejudice by granting a continuance; and (4) the importance of the witness's testimony. *See Barrett*, 95 F.3d at 380.

Regarding the first factor, as explained above, AK Steel, Bayer, and Lubrizol believe that the Chadick and McAngus reports will aid the court in making an allocation in this case and that the reports therefore were properly submitted on January 30, 2004.

As for the second and third factors, El Paso has not explained how it has been prejudiced by the reports even if there were untimely. Only one expert, Robert Morrison, has been deposed⁸ in this case; that deposition was taken almost a month after the Chadick and McAngus reports were filed. All of the parties' experts, including El Paso's, have had ample opportunity to prepare rebuttal testimony to the Chadick and McAngus reports (assuming that such testimony is even necessary or possible). Additionally, the Court recently issued a Fourth Amended Scheduling Order extending all of the remaining deadlines in this case, and will likely be asked

⁸ It is more accurate to say that his deposition was partially taken, as his deposition was continued after two and a half days. So, the parties will have another chance to ask him questions and Dr. Morrison will have an additional chance to voice any rebuttal opinions, if necessary, to the Chadick or McAngus reports.

to do so again in the near future by the Plaintiffs. Thus, there is no need for the Court to address this issue.

As to the fourth factor under *Barrett*, Messrs. Chadick and McAngus's testimony will be important to AK Steel, Bayer, and Lubrizol because they have no other designated experts knowledgeable of their facilities. Indeed, Mr. Chadick is the 30(b)(6) corporate representative of AK Steel,⁹ and there is a possibility that Mr. McAngus may be a 30(b)(6) corporate representative of Bayer because the only currently designated representative is suffering chronic health problems. Thus, El Paso has met its burden on none of the four parts of the *Barrett* test, and the reports should not be excluded.

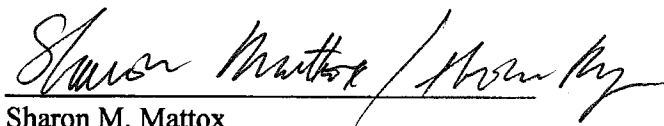
IV. Conclusion

El Paso can point to no legal authority that supports its tenuous position. Indeed, if courts were to adopt El Paso's arguments, parties would in effect be prohibited from submitting zero allocation reports. Nevertheless, even if the Court finds that El Paso is correct, excluding the reports is not appropriate under the *Barrett* test.

WHEREFORE, for the reasons stated above, AK Steel, Bayer, and Lubrizol asks the Court to deny El Paso's Motion to Exclude the Expert Reports of Bill Chadick and Jess McAngus.

⁹ Mr. Chadick had his deposition taken in this capacity on March 1, 2004.

Respectfully submitted,

A handwritten signature in cursive script, appearing to read "Sharon Mattox / Sharon Mattox".

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CERTIFICATE OF SERVICE

I certify that a true and correct copy of Joint Response of AK Steel Corporation, Bayer CropScience, Inc., and The Lubrizol Corporation to El Paso Parties' Motion to Exclude Experts' Reports and Testimony was served upon the following counsel of record on this the 15th day of March 2004:

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A handwritten signature in black ink, appearing to read 'KL', is written over a horizontal line.

Keith W. Lapeze

A REPORT

**TURTLE BAYOU DISPOSAL SITE
ALLOCATION ISSUES**

Prepared by

**DAVIS L. FORD & ASSOCIATES
Austin, Texas**

January 30, 2004

Exhibit A

Section I. Introduction

This report is prepared at the request of Defendants A.K. Steel Corporation, Albemarle Corporation, Bayer Cropscience, Inc., Beazer East, Chevron U.S.A. Inc., E. I. du Pont de Nemours and Co., Ethyl Corporation and Company, Exxon Mobil Corporation, GATX Corporation, The Goodyear Tire & Rubber Company, J. M. Huber Corporation, Occidental Petrochemical Corporation, PPG Industries, Inc., The Lubrizol Corp., and United States Steel Corporation (formerly USX Corporation).

This case involves the Turtle Bayou Disposal Site located just north of Interstate 10 on State Road 563 near Trinity Bay, Liberty County, Texas. The Turtle Bayou Site was purchased in May 1969, with the intent of residential development. Disposal of industrial wastes at the site commenced shortly thereafter, initially to oil a road. Later the wastes were placed in pits and impoundments at the site.

I have been asked, along with others, to assist in developing an allocation assessment based on the nature and volume of waste disposed at the Turtle Bayou site. In connection with that effort, I have focused on the contribution of the Tenneco Chemical facility on La Porte Road in Pasadena, Texas. Others have focused on the contribution of the Arco plants (the Oxirane Bayport plant, the Sinclair Koppers plant, and the Arco Chemical Sheldon Road plant). Together we have also considered the contribution of others. As part of this effort, we have considered the total volumes of waste disposed of at the site and the volumes likely sent by El Paso and the Arco entities relative to the contributions of the plants of other parties in this case. I have worked with and relied upon Bob Zoch, who focused on the Arco plants, Michael Wild, of NewFields, who has developed a database of sampling data from the Turtle Bayou site, and Wayne Grip with Aero Data, who has analyzed the available aerial photographs of the site before, during, and after the disposal took place at the site.

It is my opinion that substantially all of the waste at the Turtle Bayou site came from the Tenneco Chemical and Arco plants. The nature and volume of the waste found at the Turtle Bayou site is consistent with the nature and volume of waste sent to the site from these facilities. If there was any waste from other plants or parties, the volume and characteristics in relation to the wastes of Arco and Tenneco would not have made any significant difference in the nature or extent of past and future remediation required. It is my opinion that substantially all the cost of remediation therefore should be allocated to Arco and/or El Paso.

All the chemical constituents of concern detected above background levels at the Turtle Bayou site were present in the manufacturing processes at one or more of the Tenneco and Arco facilities. In fact, two relatively unique marker or indicator compounds produced and disposed by these facilities are found extensively throughout the site: Vinyl Chloride, which is a marker for the Tenneco waste, and TBA, which is a marker for the Oxirane waste. Both of these substances are particularly difficult to remediate. In addition to the types of chemicals in the waste, the available evidence indicates that these plants sent substantial volumes of waste to the Turtle Bayou site.

Tenneco Chemical

The production of Vinyl Chloride Monomer (VCM) at the Tenneco facility commenced in 1963 and continued until 1974 when the VCM plant was shut down. The facility generated wash oils, vinyl chloride heavy ends (sometimes called "bottoms"), and other oily wastes throughout the period of its operation. There is documentary evidence of substantial offsite disposal of these wastes. Trip tickets, invoices, and other records as well as deposition testimony, indicate that wastes, including VCM heavy ends, generated at the Tenneco La Porte plant were conveyed by French Limited transporter vehicles and deposited at the Turtle Bayou site (known sometimes as the "563" site or French "Winnie" site). It should be noted that there was a different site used by French located about two miles northeast of the Town of Winnie, which was shut down after it was discovered in July 1969. In addition, through internal documents in their files and

interrogatory responses, Tenneco (now El Paso), acknowledges that its wastes were disposed at the "563" Turtle Bayou site

It appears that most if not all of the vinyl chloride present in the groundwater at the Turtle Bayou site can be attributed to the disposal of VCM heavy ends by Tenneco. Tenneco (La Porte Plant), Occidental (Diamond Shamrock) and Ethyl are the only area plants which produced vinyl chloride monomer during the 1969-1970 period. In reviewing the available and most credible information for which there is recordation the Tenneco facility is likely the only source of VCM waste disposal at the site.

This report is divided into five sections. Section II documents my background and qualifications pertinent to the subject matter of this report. I have personally provided environmental consulting services in several of the production facilities involved in this allocation endeavor over the past several decades. Additionally, I have been directly involved in similar allocation disputes over the past several years. In Section III, I outline the technical and historical components which are necessary in establishing a basis for developing my opinions. These include but are not limited to a review and analysis of the following:

- Trip tickets, invoices, and other applicable documents;
- Interrogatory responses;
- Aerial photographs of the site;
- Plaintiff and Defendant expert reports
- Groundwater quality results from the Turtle Bayou Disposal Sites;
- Production capacities and corresponding residual generation rates;
- Technical literature and references;
- Applicable biotic and abiotic reductive dechlorination information, relating to the "daughter product" issues;
- Timelines based on historical documents;
- Constituent physical and chemical properties;
- Deposition testimony, and
- Direct personal knowledge of many of these issues.

Section IV includes a list of documents, testimony, personal files, and my own experience as an environmental engineering practitioner which sets forth the bases for my opinions which are cited in Section V. My academic and practitioner experience record, publications, previous client listing, litigation experience, and compensation schedule is included in the Appendices of this report.

Section I. Introduction

Section II. Background and Qualifications

Section III. Technical and Historical Review of Key Issues

Section IV. Materials Reviewed and Bases for Opinion

Section V. Opinions

Appendices: Appendix A - Biographical Information, Publications

Appendix B - Litigation Experience

Compensation Schedule-Davis L. Ford

Section II. Background and Qualifications

A. Academic and Certification Qualifications

- Bachelor of Science in Civil Engineering, Texas A&M University, 1959
- Master of Science in Environmental Engineering, The University of Texas at Austin, 1964
- Ph.D. in Environmental Engineering, The University of Texas at Austin, 1967
- Adjunct Professor, College of Engineering, the University of Texas at Austin, 1968 to present
- Engineering Accreditation Commission - Accreditation of University-level College of Engineering
- Registered professional Engineer - 12 states (Texas, Colorado, and New Mexico - active; selective states - inactive)

- Past member, Science Advisory Board, Environmental Protection Agency
- Member, National Academy of Engineering
- Past President, American Academy of Environmental Engineers, U.S. certification organization of qualified environmental engineers

B. Experience in Engineering Practices

- Over forty-two years of experience as a practicing environmental engineer and educator, with specific knowledge relating to industrial treatment processes, in-plant control of wastes, solid waste management, hazardous and non-hazardous solid waste remediation, and overall environmental control projects.
- Served as consultant to over 100 industries, eight foreign governments, and several state and federal agencies.
- Performed environmental audits for industries for which ownership transfer was being considered; managed solid waste identification, classification, dewatering, and disposal projects; and provided oversight at hazardous waste remediation sites for the cleanup of polychlorinated biphenyls (PCBs), polynuclear aromatics (PNAs), chlorinated solvents and other volatile organic compounds (VOCs) and other organic and inorganic constituents.
- Conducted operator training courses dealing with industrial wastewater treatment, in-plant control, solid waste management, and groundwater and soil remediation, and managed environmentally-related construction projects.
- Reviewed cost effectiveness and allocation of costs to participants (PRPs) associated with CERCLA and non-CERCLA removal and remediation projects.

- Designed major industrial wastewater sludge handling facilities, including preparation of process flow sheets, mass balances, piping and instrumentation diagrams (P&IDs) and construction documents (plans and specifications).
- Provided environmental engineering services over the past four decades to several of the industrial plants involved with the Turtle Bayou Disposal Site.

C. Biographical Information and Publications

My biographical data, client representations, publications, litigation experience (past five years), and compensation schedule are included in Appendix A and Appendix B of this report.

Section III. Technical and Historical Review of Key Issues

It is necessary to establish a technical and historical review of issues key to my opinions as well as addressing some of the opinions offered by Mr. Richard Bost, expert for Tenneco (El Paso). The major issues included in this section refer to VCM heavy ends generation rates, the chemical and physical characteristics of these residuals, documentation of the vinyl chloride contamination in the Turtle Bayou groundwater originating from Tenneco, linkage of Turtle Bayou contamination to source, a review of possible sources from other operating plants, and the "daughter" theory of vinyl chloride in the subject groundwater being attributable to the reductive dechlorination of perchloroethylene (PCE), trichloroethylene (TCE), and/or cis and trans dichloroethylene (DCE).

A. Generation Rates of VCM Heavy Ends

The first step in my analysis of the Tenneco Chemical contribution to the site is to assess the volume of VCM heavy end waste ("residuals")

that the plant would have generated during the relevant time period. In the early 1970s, EPA used the "building block" approach in developing the effluent guidelines for designated industrial categories (including organic chemicals). Using a wide variety of production and residual data from operating chemical plants throughout the U.S., ranges of residuals generation as a function of production rates were established. A similar yet more site-specific approach is to determine the time-related volumes of selected residuals which are transported off-site to various receptor disposal sites. This information can be estimated by a review of trip tickets, invoices, drivers' testimonies, 104(e) responses, internal memoranda, and other sources. Several documents were used in this calculation for Tenneco's VCM heavy ends production rate from the Pasadena plant and transported to several commercial disposal sites, including Turtle Bayou. These calculations are presented in Table 1. The VCM heavy ends waste generation rate appears to center around 700 gal/day, with the exception of Tenneco's interrogatory response of only 32,000 gallons going to Turtle Bayou (which is inconsistent with trip tickets, miles logged, invoices, and truck drivers' testimonies).

B. VCM Heavy Ends---Chemical and Physical Characteristics

Tenneco expert Mr. Bost opined in his December 19, 2003, report that the VCM heavy ends transported by French to Turtle Bayou were highly volatile, contained 84% VC and 16% 2-chloropropene and would be "99%" vaporized by the time it arrived by tank truck to the Turtle Bayou Site. This opinion has no credence, unless there is some documentation supporting the true characteristics of VCM heavy ends. In fact, Mr. Bost's opinion is directly contradicted by Tenneco's own Operating and Process Manual for its Vinyl Chloride Monomer Plant (EPEC 0849-000219). On page II-7 of this manual (EPEC 0849-000228), it states:

"Bottoms from the Fractionator flow directly through the water cooled heavy ends cooler E-22 to the Heavy Ends Tank C-18" [verified by Tenneco and others to be the loading point for off-site disposal to Turtle Bayou].

"This stream contains all the heavy contaminants and by-products. It is hoped that this volume will be small. At the present time, this material has less than zero value. Its disposition is not fixed. However, a connection to G-6 has been provided, as has a line leading to a truck loading spot."

The key point in this manual is the statement that the VCM heavy ends have "zero" economic value. Mr. Bost's contention that the VCM heavy ends are comprised of 84% Vinyl Chloride and 16% 2-chloropropene is at odds with this statement because a waste of this composition does in fact have economic value on the market. Moreover, his corresponding calculations of boiling point based on Raoult's law using corresponding boiling points (or vapor pressures) would not be valid based on the "contaminants" and "impurities" in the heavy end fraction. I have knowledge from other operating companies that produce VCM heavy ends that corroborates Tenneco's description in their operating manual of these residuals. The fact that vinyl chloride (as well as other chemicals detected at Turtle Bayou) were found in the groundwater near the former VCM plant and acetylene plant at the Tenneco Pasadena facility also contradicts Bost's theory that "99% evaporated" into the air - he does not explain how it was found in the groundwater under the Tenneco facility (Espey Huston Environmental Assessment Report, EPEC 0563-000015 to 0563-000060) or at the Turtle Bayou site. Additionally, Bost incorrectly calculated the specific gravity values of a "84%-16%" blend of vinyl chloride and 2-chloropropene.

C. Documentation and Interpretation of VCM Heavy Ends Transfer from the Tenneco Pasadena Plant to Turtle Bayou and Characteristic Linkage to Turtle Bayou Groundwater

I have reviewed a packet of bills of lading, scale weight tickets, invoices, and related documents in estimating the volume of vinyl chloride heavy ends were transported from the Tenneco Pasadena plant to Turtle Bayou. In addition to those tickets that directly connect Tenneco to Highway 563, other invoices and trip tickets indicate that additional trips were taken. In addition, the production records and other available information indicates that we do not have documentary evidence for all loads of waste that were taken from the Tenneco facility.

Approximately 140,000 gallons of VCM heavy ends was transported to the Winnie sites, much of which went to the "563" Turtle Bayou site. Tenneco acknowledges that 32,070 gallons went there. (Tenneco correspondence to Ms. Patrice Miller, EPA, October 18, 1991; deposition of El Paso corporate representative Roger Towe) This volume is actually documented in the invoices and trip tickets that have survived. However, it seems clear that only a fraction of the documentation of off-site hauling of Tenneco waste has survived. Tenneco acknowledged that the "563" materials were disposed of between August 25, 1969, and November 21, 1969 (p.4). A total shipment tabulation of 131,311 gallons to Turtle Bayou was produced by El Paso in 1991. (EPEC 0199-000538) Documents generated in the mid-1980s estimated that some 140,000 gallons went to the site, including approximately 40,000 gallons of acetylene wash oil and 91,028 gallons of VCM heavy ends. [El Paso Exhibit 90 (Sikes), EPEC 0184-000049-50]

Table 2 is a list of the constituents of concern detected at Turtle Bayou at levels that exceeded regulatory requirements, which were present in either or both wastes of Tenneco (El Paso) and Arco. Average VOC and PAH concentrations in the Turtle Bayou groundwater attributed

to Tenneco are presented in Figures 1 and 2. This data is derived from Table 3 which notes the percent of sample detection, maximum concentration, and average concentration for groundwater results 1996-2003 (data summarized by NewFields based on ARCO/Lyondell Analytical Laboratory Results Electronic Database, Feb. 5, 1996, through Sept. 23, 2003).

D. Review of Potential Sources Other Than Tenneco for Disposal of VCM Heavy Ends at Turtle Bayou

I have reviewed available information from two other possible candidates which can be considered as potential sources of vinyl chloride present in the Turtle Bayou groundwater. These plants located in the area are Occidental (Diamond Shamrock-Deer Park Works) and Ethyl.

The Occidental facility had a pilot-scale VCM plant from 1958 to 1970 which tested experimental VCM production technology. Hydrogen chloride and acetylene were the primary feedstocks for this pilot plant. Vinyl chloride produced at the pilot plant was used in the PVC process at Deer Park Works, but the bulk of the vinyl chloride feedstock was purchased from outside sources. According to the Defendant Occidental Chemical Responses to Tenneco Interrogatory Requests, "no wastes were transported to the Turtle Bayou site." I am not aware of any testimony from a truck driver or other witness indicating that any VCM heavy ends went off-site from the Occidental facility. Further, there is no documentation of off-site shipments to Turtle Bayou, and the available documentation indicates that all VCM waste was disposed of on-site.

The Ethyl plant also manufactured VCM, but used a different process. The Ethyl plant performed thermal cracking (pyrolysis) of ethylene dichloride. The heavy end stream was recycled to the on-site ethylene dichloride plant. There were no other wastes. As with Occidental, there is no testimony or documentary evidence of any off-site shipments of VCM heavy ends to Turtle Bayou or any other off-site

location. Further, the Ethyl process did not use 2-chloropropene, which is found at the Turtle Bayou site. There is a 94% correlation between vinyl chloride and 2-chloropropene in groundwater sampled at the Turtle Bayou site, which is inconsistent with Ethyl waste.

E. Discussion of Biotic Reductive Dechlorination of Chlorinated Compounds to Vinyl Chloride

It has been established for some years that vinyl chloride present in the subsurface can be a "daughter" product, resulting from the biotic reductive dechlorination of perchloroethylene (PCE), trichloroethylene (TCE), cis 1,2 dichloroethylene (DEC), or 1,1 dichloroethylene (DCE). This dechlorination process is graphically illustrated in Figure 3, noting the biotic reaction pathways from PCE to TCE to DCE to vinyl chloride (VC). In order for this transformation to occur in the subsurface, a reductive environment requires anaerobic conditions (no dissolved oxygen is present). Dissolved oxygen levels in the groundwater were detected in 99.6% of the observations, with an average concentration of over 2 mg/l. Additionally, the presence of sulfate and nitrates further confirms a reducing environment does not exist. Unless there are anaerobic conditions, microorganisms are not able to dechlorinate these compounds. Based on the characterization data included in Table 3, the Turtle Bayou groundwater is clearly not a reductive environment, blocking the ability to produce "daughter products." Thus, Mr. Bost is incorrect in asserting that vinyl chloride in the Turtle Bayou groundwater is a result of "daughter products."

Pages 13-18 have been intentionally omitted pursuant to Local Rule CV-7(b).

- Grip, W., Aero-Data Corp., (Dec. 2003)
- Turtle Bayou Project Remediation Report (June 2002)
- Interrogatory Response—Defendant Occidental Responses to El Paso Requests for Production
- Various Tenneco Correspondence with EPA, other regulatory agencies, and interoffice communications
- A review of other information which may be applicable to these issues

Section V. Opinions

Based on my review of the information outlined in Section IV of this report, additional documents from my personal files, my specific environmental experience over the past four decades in the chemical and related industries, and my familiarity with many of these facilities located in the Texas Gulf Coast area, I have formed the following opinions. If any additional information is furnished to me in the future, I reserve the right to modify these opinions if appropriate.

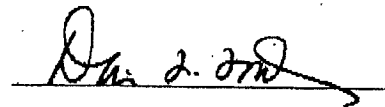
1. The Turtle Bayou Disposal Site was active and receiving wastes from sometime in mid-1969 until early to mid-1970. Tenneco (Pasadena Plant) sent VCM heavy ends and other wastes to the Winnie "563" Turtle Bayou site from May of 1969 through November 1969.
2. Tenneco was the only known source of vinyl chloride heavy ends disposed at Turtle Bayou. Vinyl Chloride heavy ends are RCRA-listed hazardous wastes, irrespective of the manufacturing process used in generating these residuals.
3. Tenneco sent a minimum of approximately 32,070 gallons (approximately 320,000 pounds) of VCM heavy ends and more

probably up to 131,000 gallons (approximately 1.3 million pounds) or more of VCM heavy ends to Turtle Bayou in 1969. This is based on Tenneco's own admissions and bills of lading, invoices, and other records and/or truck driver's deposition testimony.

4. The characterization and nature of VCM heavy ends, although not well defined, does not lend credence to Mr. Bost's extreme assumption that "99%" of the material would be vaporized in transit from Tenneco's Pasadena plant to Turtle Bayou.
5. The presence of vinyl chloride in the Turtle Bayou groundwater cannot be attributed to the "daughter product" theory as proposed by Mr. Bost. The subsurface conditions at Turtle Bayou do not provide the environment for such a reductive transformation to take place.
6. Tenneco also had a continuous waste stream of methanol tails and wash oil that was hauled offsite for disposal. Tenneco used French Limited to haul this waste, at least through mid-1969, some of which went to the "French Winnie" site and possibly also to the Turtle Bayou site. The wash oil contained benzene and other hazardous substances. The average daily volumes of this waste stream far exceeded the volumes of VCM heavy ends waste coming out of the Tenneco Chemical facility.
7. Most if not all of the organic contaminants discovered in the Turtle Bayou groundwater can be attributed to waste residuals generated by the Tenneco Pasadena Plant.
8. All of the chemical constituents of concern detected above background levels in the Turtle Bayou groundwater can be linked to

those waste products generated by Tenneco and/or the ARCO plants. Mr. Zoch's report underscores this opinion and can be considered as a companion document to this report.

9. Based upon equitable factors, it is my opinion that past and future costs should be allocated to the Tenneco and Arco plants.

A handwritten signature in dark ink, appearing to read "Davis L. Ford", is written over a horizontal line.

Davis L. Ford

January 30, 2004

All attachments have been intentionally omitted pursuant to Local Rule CV-7(b).

**LYONDELL CHEMICAL COMPANY AND
ATLANTIC RICHFIELD COMPANY**

vs.

ALBEMARLE CORP., ET AL

Cause No. 01:01-CV-890

Consolidated with

No. 01:02-CV-003

No. 01:03-CV-0225

**UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF TEXAS, BEAUMONT DIVISION**

Report of

Robert M. Zoch, Jr., P.E.

January 30, 2004

Respectfully Submitted:

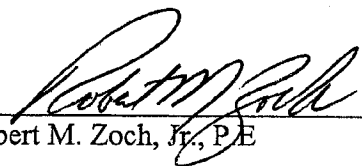

Robert M. Zoch, Jr., P.E.

Exhibit B

**LYONDELL CHEMICAL COMPANY AND
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Report of

Robert M. Zoch, Jr., P.E.

January 30, 2004

1.0 INTRODUCTION

1.1 Purpose – On December 19, 2003, I submitted a report presenting relevant historical information concerning industrial waste management in Texas, the use of the Turtle Bayou site for disposal of waste materials, and the responsibility of three Houston area plants for waste disposal at the site. In that report I concluded that wastes generated by the Oxirane, Lyondell and Sinclair Koppers plants were disposed at the Turtle Bayou site during its brief operational history, resulting in the release of hazardous substances and the incurrence of response costs. I adopt the conclusions, opinions and relevant supporting information from that report by reference in this submission.

Since that time, I have been asked by Defendants in this matter to evaluate relevant factual information which could assist the Court in developing an equitable allocation of response costs which have been expended and remain to be incurred to clean up the Turtle Bayou site. This report presents my analysis of pertinent technical information which is applicable to response cost allocation. Should additional information become available, I will evaluate its potential impact on my analysis and modify my conclusions and recommendations if necessary.

1.2 Materials Reviewed – In addition to the material I reviewed in preparation of my December, 2003 report, I have also considered the following:

- Pleadings and discovery in the three consolidated cases referenced above.
- The expert report of Richard C. Bost, dated December 19, 2003 and miscellaneous documents referenced by him.
- The reports of Plaintiffs' experts Robert Morrison and Thomas Hairston, both dated November 7, 2003.
- The allocation report of Davis L. Ford and Associates, dated January 30, 2004.
- Historical aerial photography of the site and interpretations thereof provided by Aero Data Corp., including the expert report of Wayne M. Grip, dated December 2003.
- Summaries and statistical analyses of the analytical data obtained by several investigators concerning soil and groundwater contamination at the site.
- Various documents concerning Tenneco Chemical and Tenneco Polymers, including their 104(e) response to the EPA Turtle Bayou inquiry, the VCM plant operating and process manual and a snapshot of the VCM heavy ends composition.
- Various published documents concerning CERCLA allocation and EPA guidance regarding settlement of CERCLA claims.

1.3 Credentials – A summary of my education and professional experience is contained in my December 2003 report and will not be repeated here. In addition to my CERCLA experience cited in that report, I have also provided technical support in assessing liability and developing equitable allocations of response costs, not only for sites listed on the NPL, but also in CERCLA private party claims for contribution. The copy of my resume, matters in which I have provided deposition and trial testimony over the past four years and my billing rate presented previously remain current.

2.0 EVALUATION OF AVAILABLE EVIDENCE

Documentary evidence concerning the sources, composition, quantities and duration of industrial waste disposal at the Turtle Bayou site is sparse. From my review of available information, and based upon my knowledge and experience concerning waste disposal and regulatory agency practices during the relevant time period, I have reached the following conclusions and opinions, the bases for which are also summarized:

2.1 The Turtle Bayou site was utilized for industrial waste disposal from July 1969 until September 1970, at the latest.

Much of the basis for this opinion concerning the operational time line for the site was presented in Section 2.4 of my December report. Mr. Lang's initial purchase of a 5/6 undivided interest in the unimproved property occurred on May 29, 1969, with acquisition of the remaining ownership interest and access agreements completed around the first week of July 1969.¹ Waste materials would have first been received at the site as part of the subsequent road building project during July.

The last observed waste disposal at the site occurred in June 1970 as reported in Mr. Johnson's inspection report.² This is consistent with my review of French Ltd Accounts payable vouchers and checks registers, indicating payments to Mr. Lang for waste disposal, the final payment having been made in July 1970.³ It is also consistent with all other available documentation. Mr. Johnson's handwritten notes also indicate that closure of the waste pit was in progress around the first of October 1970.⁴ This site closure was confirmed by Mr. Johnson during his visit on October 21, 1971.⁵

Early in 1971, Joiner Oil initiated payments to Mr. Lang for an interest in his property⁶ and site geologic investigations were performed on January 13, 1971⁷ to support a commercial industrial solid waste registration application for the site filed in April 1971. Under the scrutiny applied to the site by the Texas Water Quality Board (TWQB) and the public during the registration application process, it is my opinion that Mr. Smith and Mr. Lang would not have allowed further waste shipments to the site immediately preceding and during this process.

Based upon all documentation available to me, it is my opinion that receipt of significant waste volumes at the Turtle Bayou site ceased by June 1970, and that no waste transport to the site occurred after September 1970 at the latest. Mr. Grip's detailed analysis of available historical aerial photography of the site also supports the conclusion that waste disposal at the site ceased prior to November 1970.⁸

2.2 Industrial Waste Transport to the site was most likely performed exclusively by French Ltd during 1969 and 1970

During the 1960s, when French Ltd became a major industrial waste transporter, they used successive sites for waste disposal, depending upon availability. Following passage of the Texas Solid Waste Disposal Act in 1969, the disposal site they were then

ial and Incomplete Chain of Title on Turtle Bayou site, Liberty County, Texas (TBUS 00005971).

son, Clarence E., handwritten note to file (LTB 011255).

ch Ltd, Accounts Payable and Check Registers, December 1969-June 1971 (TBUE 00003809-3883).

ra, note 2 (LTB 011257).

son, Clarence E., Memo to Dick Whittington, re: Petrochemical Systems, Inc. Liberty County, October 22,

1.

er Oil Co. Inc., Check Summary, April 30, 1971 (LTB 013791).

stal Testing Laboratory, Soil Testing Report, January 14, 1971.

i, Wayne M., Statement of Opinions Concerning Interpretation of Aerial Photographs Showing Petro-Chemical
ems, Inc. (Turtle Bayou), December 2003.

using came under significant scrutiny by the TWQB. In their attempt to eliminate waste discharges from that site, French Ltd began processing wastes by emulsion breaking and incineration, and also began searching for alternative disposal sites.

Sometime in 1969, a 52 acre tract about 2 miles south of I10 near Winnie was purchased by French Ltd upon which to develop a new waste disposal site.⁹ During May 1969 they began using this site for open burning of liquid waste, with two waste generators identified in July 1969 as Tenneco, Houston and Sinclair-Koppers, Pasadena.¹⁰ After French Ltd was notified by the County Constable that this open burning was in violation of State Law, they committed to discontinue that practice.¹¹ Shortly thereafter, French Ltd described their proposal to build a waste processing and incineration facility at the Winnie site,¹² the function of which was to be very similar to their operations at the previous location (i.e. probably a replacement). There is no evidence that this proposed facility was permitted or that it was ever developed.

Also in July 1969, French Ltd was selected to dispose of waste from Oxirane Chemical Company¹³ (Oxirane), which became available due to a dispute with Oxirane's former waste disposal contractor, Malone Service Company.¹⁴ The need to dispose of large volumes of hydrocarbon contaminated process water from Oxirane coincided with Mr. Smith's request for waste oil to stabilize Mr. Lang's access roads. Initially, therefore, the Turtle Bayou site was used exclusively by French Ltd to dispose of this Oxirane wastewater.¹⁵ Since French Ltd also transported other process wastes for Oxirane as well as for the Tenneco and Sinclair-Koppers plants which it could no longer burn at its Winnie site, some of these wastes were also diverted to Turtle Bayou, likely around August 1969. Mr. Smith did not identify any waste transporters except French Ltd that ever utilized the Turtle Bayou site for waste disposal.

There have been allegations that Liberty Waste and/or other affiliates of Joiner Oil companies (Joiner) may have sent waste to the site. Fred Bruce, who left French Ltd and worked for Joiner from 1971 until 1983, testified that, to his knowledge, Joiner never transported waste to Turtle Bayou during that period.¹⁶ That would be consistent with my opinion that no waste disposal occurred at the site after September 1970 at the latest.

It is also highly unlikely that Joiner transported waste to Turtle Bayou before 1971 for the following reasons:

- In April 1970 when Joiner was first seeking authorization to use Turtle Bayou, Clarence Johnson advised him not to use the site for road oiling until the existing water quality problem was eliminated.¹⁷

⁹ Elliott, Marshall (TWQB) Interoffice memorandum to Joe Sorrels re: French Ltd, Jefferson County Plant, August 12, 1969 (EPEC 0182-000804).

¹⁰ Bateman, Victor to Jefferson County Commissioners Court re: French Ltd, Inc., July 18, 1969 (EPEC 3453-000047).

¹¹ Id.

¹² Supra, note 9.

¹³ Jones, E. W. (ARCO Chemical Company), letter to Mr. Larry Thomas (EPA), March 10, 1983 (TBUS 00005961).

¹⁴ Video Deposition of Fred Bruce, C.A. No. H-89-3487, June 19, 1992, p107 (LTB 14790).

¹⁵ Id. p109 (LTB 14792) and p127 (LTB 14810).

¹⁶ Supra, note 14, p 165 (LTB 14848).

¹⁷ Johnson, Clarence E., Interoffice Memorandum to Dick Whittington re: Don Lang Industrial Disposal Site (LTB 0011253-254).

- During 1969 and 1970, Joiner controlled his own waste disposal sites, one in Liberty County not far from Turtle Bayou,¹⁸ and one he acquired from Don Lang in Harris County.¹⁹
- Even Plaintiffs' expert report purportedly linking Joiner to the site, does not allege any disposal by Joiner at Turtle Bayou prior to 1973.²⁰

Finally, even after exhaustive discovery in two cases previously brought by the EPA and the present private party litigation, no documentary evidence has been identified linking any waste transporter other than French Ltd to the Turtle Bayou site. Allegations from vacuum truck drivers that other transporters could have been involved have largely been dismissed due to the questionable veracity of interview testimony collected by Verification, Inc. There is currently no credible evidence that any transporters other than French Ltd hauled industrial waste to the site.

2.3 The estimated volume of liquid wastes received at the Turtle Bayou site could reasonably have been contributed from four identified plants

As discussed earlier, the Turtle Bayou site began receiving wastes exclusively for the Oxirane (Bayport) plant in mid-1969. Also during that year wastes generated by Tenneco (Pasadena) and Sinclair-Koppers (Houston) were transported to the site as evidenced by French Ltd shipping documents. Finally, a significant customer of French Ltd's industrial waste disposal services during the relevant time period was the Sinclair Petrochemicals Lyondell (Channelview) plant. In my opinion these four plants were the primary, if not the exclusive, generators of waste transported to Turtle Bayou for disposal. Estimates of the types and amounts of waste sent to the site from these sources can be estimated from available documentary evidence as follows:

2.3.1 Tenneco – An evaluation performed by Tenneco of its plant waste managed by French Ltd indicates that some portion of their "VCM heavy ends" and their "naphtha/methanol tails" were shipped to various French Ltd disposal sites from April 1968 through mid-November 1969.²¹ Although their initial conclusion was that approximately 40,000 gallons of naphtha/methanol tails and 91,000 gallons of VCM heavy ends were shipped to the Turtle Bayou site,²² they subsequently amended their estimate to 32,070 gallons of VCM heavy ends and no naphtha/methanol tails in the plant's 104(e) response to the EPA.²³ The latter

¹⁸ Johnson, Clarence E., Interoffice Memorandum to Dick Whittington re: Liberty Waste Disposal Company - Mr. C.P. Joiner, January 18, 1971 (LTB 009714-721).

¹⁹ Oral Deposition of Wallis Wilson Smith, C.A. No. 1:94CV-57, September 13, 1994, p167 (LTB 011525).

²⁰ Hairston, Thomas J., PhD, Hairston Consultants, November 7, 2003, Appendix D.

²¹ Chronology – Tenneco's Pasadena Plant Waste Shipments to French Ltd, September 20, 1985 (EPEC 0184-000049).

²² Tenneco Chemicals – Pasadena Plant, Waste Shipments to Turtle Bayou, September 3, 1991 (EPEC 0199-000538).

²³ Hees, Harold F. letter to Ms. Patrice Miller (EPA) re: Petro-Chemical Systems/Turtle Bayou Site 104(e), October

amounts were calculated from the identified French Ltd shipping documents, assuming a liquid waste density of 10 lb/gal. for the vinyl chloride monomer (VCM) heavy ends. Tenneco's position in calculating this lower volume is based on the questionable assumption that they have been able to locate documentation for every shipment of their waste by French Ltd during the relevant time period. This appears to be an unsupported assumption based upon available documentation for other time periods. As concluded by Dr. Davis Ford in his expert report, more wastes were likely shipped to Turtle Bayou after the French Ltd. Winnie disposal site was shut down, significantly increasing the total. Conservatively, it is estimated that at least 6 loads per month of Tenneco waste were disposed at the site from around the first of August until mid-November 1969.

2.3.2 Sinclair-Koppers Company – Sinclair-Koppers issued purchase orders to French Ltd for vacuum truck and tank cleaning services on an annual basis. The document covering the relevant time period was a blanket order for services from June 4, 1969 through June 30, 1970.²⁴

French Ltd shipping documents which have been produced cover December 1968 and the first six months of 1969. Two additional documents for December 1969 and one for September 1970 are also available. The only two shipping documents applicable to disposal during the relevant time period demonstrate disposal at Turtle Bayou. As discussed earlier in Section 2.2, French Ltd was disposing of Sinclair-Koppers waste at the Winnie burn pit for some period of time until shut down in mid 1969.

These wastes were most likely diverted to the Turtle Bayou site beginning at the end of July 1969, which is a reasonable conclusion given that the only shipping documents available from July 1969 through June 1970 identify Turtle Bayou as the disposal site. Based upon prior month's shipping records, it is evident that wastes were removed sporadically from tanks and pits within the plant, with an average of seven loads per month transported off-site. It is further concluded that this waste was primarily comprised of slop oil from M-223 and cracking residue from 156 F with small amounts of waste from the flare pit. Although some minor amounts of styrene residue likely found their way into these waste streams, most of the styrene residue from A-205 is documented as having been sent to Lowe Chemical during the relevant time period.²⁵

2.3.3 Sinclair Petrochemicals (Lyondell) – The Lyondell plant was a long time customer of French Ltd, with large quantities of the plant's wastes having been transported to the Sikes and French Ltd (Highway 90) sites for disposal. According to plant records, French Ltd disposed of 25,290 tons in 1970 through

18, 1991.

²⁴ Sinclair Koppers Company, Purchase Order No. 129-90-48, June 23, 1969 (TBUE 00003793-795).

²⁵ Kellogg, Arco Polymers-Sinclair Koppers Plant, Styrene and Residue Production, Production Years August 1961 thru 1977, June 16, 1987.

November, when French Ltd was replaced by Malone Service Company.²⁶

One waste stream in particular was likely transported by French Ltd to the Turtle Bayou site, that being the API separator skimmings from the MEK plant. That waste material was identified as "oils containing C₃-C₈ alcohols, spent sulfuric acid, ketone" and was transported by French Ltd from November 1965 to February 1971.²⁷ While other waste streams generated at the plant could also have been sent to the Turtle Bayou site, this one is a likely source of methyl isobutyl ketone and methyl butyl ketone, and of the low pH observed at portions of the site. Using the average generation rate over the time period identified above,²⁸ two loads per month (approximately 74,000 pounds/mo) would have been taken to Turtle Bayou.

2.3.4 Oxirane – From available documentation, I have concluded that two types of Oxirane waste were taken to the Turtle Bayou site by French Ltd. First, hydrocarbon contaminated process water described by Mr. Bruce as "dirty water... slick with hydrocarbons",²⁹ is a reasonable description the D-803 overhead product. This wastewater contained high concentrations of refractory hydrocarbons which, when discharged to the Bayport regional wastewater treatment plant during production startup, caused major treatment plant upsets. As a result, by February 1969, the D-803 wastewater as well as hydrocarbon leaks and spills were being trucked out of the plant for disposal.³⁰ At that time, this waste was generated at a rate of about 840,000 gallons/month,³¹ and contained numerous organic compounds including glycols, tert-butyl alcohol (TBA), acetone, methanol, ethers and sodium hydroxide.³² The sodium hydroxide (caustic) present is likely the source of its "slick" nature described by Mr. Bruce, and I have calculated that this stream may have contained as much as 5% hydrocarbons.

The volume of D-803 wastewater disposed off-site by Oxirane varied over time. Apparently, when French Ltd took over the business from Malone, the full volume generated was transported to Turtle Bayou, since Mr. Bruce recalled about 15 loads of 130 barrel capacity (nominally 5,000 gallons each) per day for the first 30 to 45 days.³³ This volume is generally consistent with the rate of D-803 overhead production and with the waste disposal plan for the plant which included positioning two-5,000 gallon trailers at the "heavy contaminated

²⁶ Penland, R.N. and S.F. Capps internal memorandum to M. L. Mullin re: Summary of Information Sources, Data Collection Methods, and Calculations Associated with the Lyondell Plant Waste Disposal Survey for the U.S. House of Representatives, July 5, 1979, Attachment No. 2 (ALA 004907).

²⁷ Bradley, E. B. letter to Mr. Larry Thomas (EPA), March 10, 1983.

²⁸ Id.

²⁹ Supra, note 14, p109 (LTB 14792).

³⁰ Levine, I. E., Memorandum to H. A. Hickins re: Status and Future Programs – Waste Disposal at Oxirane Chemical, February 14, 1969, p2 (AOE 021821).

³¹ Spreadsheet, Summary of Waste Disposal Costs – Oxirane Chemical Co., February 1, 1969 (AOE 021836).

³² Wynne, Peter V., letter to Mr. John C. Meyer (EPA) re: Petro-Chemical Systems, Inc., Turtle Bayou Site, Liberty, TX, February 7, 1989 (LTB 009607).

³³ Supra, note 14, p132-133 (LTB 14815-816).

sump.”³⁴ During July and August of 1969, these waste shipments likely accounted for 1,260,000 gallons (1½ months of D-803 wastewater generation) or about 252 loads hauled to the Turtle Bayou site. The disposition of this waste after August 1969 is not clearly documented; however, other waste management options, including biological treatment, steam stripping, and deep well injection were under active consideration early in 1969.³⁵

Transportation of this wastewater to the Turtle Bayou site during 1970 may be estimated from payments made to Mr. Smith and Mr. Lang for disposal. The French Ltd accounts payable and/or check register ledgers from December 1969 through June 1971 demonstrate the following.³⁶

- Waste disposed at Turtle Bayou occurred each month from December 1969 until June 1970 except for the month of March 1970.
- No entries for waste disposal at Turtle Bayou for the year following June 1970 are observed. This coincides with Clarence Johnson’s inspection reports and notifications to cease disposal at the site.
- At \$15.00 per load for disposal (the verbal agreement for waste disposal at the Turtle Bayou site³⁷), the number of loads transported to the site during the documented time period may be estimated as follows:

Table 1
Monthly Waste Disposal at Turtle Bayou

<u>Month</u>	<u>Loads*</u>
December 1969	36
January 1970	60
February 1970	64
March 1970	0
April 1970	18 ½
May 1970	71
June 1970	17 ½

*This calculation would overestimate the number of loads delivered if Mr. Smith’s recollection of a \$35/load charge is correct. Mr. Bruce appeared more confident in his recollection of \$15/load. The fractional loads likely reflect disposal by smaller vacuum trucks, such as 100 or 50 barrel rather than 130 barrel capacity.

³⁴ Hickins, H. A., Internal Memorandum to I. B. Margeloff and Mort Metzger re: Plant Waste Disposal Program, January 30, 1969 (AOE 021953).

³⁵ Supra, note 30, p3-4 (AOE 021822-823).

³⁶ Supra, note 3.

³⁷ Supra, note 14, p126 (LTB 14809).

Mr. Bruce also recalled a final wastewater disposal "campaign" from a large earthen pit at Oxirane just prior to his leaving French Ltd. The difference between the average loads delivered in April/June 1970 and those delivered in May 1970 (i.e. 53 loads) likely accounts for that event. Also, using an average of 18 loads per month of "other" waste, the volume of Oxirane wastewater hauled to the site during December 1969 through February 1970 may be estimated. The variability in volume is explained by the likely source of this waste (i.e. the miscellaneous high BOD wastes from Oxirane³⁸). The absence of wastewater hauling in March and April 1970 coincides with the completion of Oxirane's wastewater holding lagoon, Bresler's pond, in February,³⁹ which was the likely source of the wastewater transported in May.

The second waste generated by Oxirane for off-site disposal was a mixture of hydrocarbon residues which was "intermingled in a storage tank from which it was hauled away."⁴⁰ This mixture included D-502 Bottoms (Crude TBA Distillation Bottoms), D-705 Bottoms (TBA Rerun Column Bottoms) and D-905 Bottoms (Isobutylene Rerun Column Bottoms), containing TBA, Molybdenum, Iron, Isobutylene, C₅-C₆ hydrocarbons and "heavies" (i.e. higher molecular weight, lower volatility contaminants).⁴¹ Although the volume of this waste was large (over 3.5 million gallons per year⁴²), much of it was eventually incinerated off-site at the Bayport regional treatment plant or by Rollins Purle.⁴³ It is obvious, however, that some of this material found its way to the Turtle Bayou site, since French Ltd was transporting it from July 1969 until April 1971 and testing at the Turtle Bayou site has identified large concentrations of TBA and molybdenum. As an approximation, an average of nine loads per month is calculated as the difference between the total sent to Turtle Bayou and that contributed by Lyondell and Sinclair-Koppers. Although it is possible that some of this waste volume could have come from other industrial sources served by French Ltd, it is not unreasonable to conclude that its sole source was the Oxirane plant.

Although somewhat intuitive, this analysis portrays a reasonable reconstruction of waste shipments to the Turtle Bayou site. Extrapolating the average waste shipments from the French Ltd data to the months of September-November 1969 and adding the process waste transported from Tenneco during 1969 provides an estimate of the waste hauled to the Turtle Bayou site during the year of active disposal, as follows:

³⁸ Supra, note 30, p2 (AOE 021821).

³⁹ Id, p22-24 (TBUE 00005448-450).

⁴⁰ Supra, note 13, p2 (TBUS 00005962).

⁴¹ Supra, note 32, p2 (LTB 009606).

⁴² Supra, note 13, p2 (TBUS 00005962).

⁴³ Forsten, A. H. Internal Memorandum to E. B. Bradley re: Luwa Wastes, March 12, 1973. (AOE 022077-079).

Table 2
Waste Disposal at Turtle Bayou

<u>Month</u>	<u>Disposal (5,000 gal loads)</u>	
	<u>Oxirane Wastewater</u>	<u>Other</u>
July 1969	84	0
August 1969	168	24
September 1969	35	24
October 1969	35	24
November 1969	35	21
December 1969	18	18
January 1970	42	18
February 1970	46	18
March 1970	0	0
April 1970	0	18 ½
May 1970	53	18
June 1970	0	17 ½
Totals	516	201

Assuming that these 717 total loads averaged 5,000 gallons each, a total of nearly 3.6 million gallons of various waste materials were dumped at the Turtle Bayou site. Over 70% of that waste volume was the heavily contaminated wastewater from Oxirane.

Available evidence demonstrates that this waste was applied to the on-site roadway, with temporary storage in the rectangular "main waste pit" and in the "dynamite craters" adjacent to it. Additionally, stressed vegetation and surface soil sampling have identified several areas south of the roadway and along the power line easement where wastes were dumped and allowed to flow over the ground surface. Aerial photography of the site was utilized to estimate the areas impacted by these waste dumping activities, with the following results obtained:

Table 3
Waste Disposal Area Estimates

<u>Description</u>	<u>Area (sq. ft.)*</u>
Roadway (563 to Turtle Bayou)	247,388
Main Waste Pit	77,825
Dynamite Craters	4,196
Stressed Vegetation Areas	495,277
Other Soil Contamination	138,962

*Based on aerial photography analysis by Aero Data, Inc.

Waste was applied to the roadway by grading a narrow soil trough into which wastes were dumped from the delivery vehicles. The vehicles would turn around at the

power line easement and soils were then mixed with the waste and spread over the road.⁴⁴ A shallow pit was also constructed early in 1970 for temporary waste storage. Mr. Smith recalled that the pit berms were about three feet tall and that the pit never contained more than one foot of waste.⁴⁵ The TDWR investigation in 1984 suggested, however, that the pit may have contained 2-4 feet of waste from French Ltd.⁴⁶ The source of that depth estimate is not clear, but is implied to be the May 1, 1970 memorandum from Clarence Johnson which contained no depth estimate. Additionally, since it is not possible to place 4 feet of liquid into a three foot deep pit, the low end of Ms. Meadors' estimate, which equates to about 1.2 million gallons, is reasonable. Waste stored in the pit was presumably applied to the road in advance of pit closure activities in October 1970 in accordance with the agreement reached with Mr. Bruce.⁴⁷

Although Mr. Smith did not recall the use of the dynamite holes for waste disposal, Clarence Johnson observed waste in them, and a four foot depth estimated by Ms. Meadors is possible. This would account for an additional 125,000 gallons of waste disposal. The large pit constructed adjacent to and south of the site access road was reported by Mr. Smith, Mr. Johnson and Ms. Meadors to have never been used for waste storage or disposal. My evaluation of site aerial photography confirms this conclusion.

Based upon the volume and types of waste estimated to have been transported to the site, the following reconstruction provides a likely chronology of waste disposal activities at Turtle Bayou:

- Beginning in mid-July of 1969 wastewater receipts from Oxirane were incorporated into the roadway from its intersection at highway 563 to Turtle Bayou.
- At the end of July, French Ltd's nearby waste burning site at Winnie was shut down by the authorities and wastes were also diverted to Turtle Bayou.
- Ultimately, more waste was received at the site than could be immediately incorporated into the roadway and the drivers began dumping waste into the dynamite craters and in areas south of the road where there was no drainage ditch. A major dumping site was the power line easement where the trucks could conveniently turn around. Waste was also dumped near the entrance at highway 563 during wet weather conditions to avoid getting the trucks stuck.
- After the indiscriminant dumping at the power line easement was discovered by Mr. Smith, he set fire to the waste in mid-January 1970 and instructed the French drivers not to return.
- In order to continue disposal at the site, however, a pit was constructed for temporary waste storage.

⁴⁴ Supra, note 19, p55-56 (LTB 011486).

⁴⁵ Id. p63 (LTB 011489).

⁴⁶ Meadors, Stennie, Interoffice Memorandum to Bryan Dixon, TDWR, October 5, 1984. (A 208807).

⁴⁷ Supra, note 19, p62 (LTB 011488).

- When the pit began filling, a second pit was constructed south of the road to accept much larger volumes of waste. In April 1970, however, TWQB field representatives discovered the site and notified the owner and French Ltd to cease disposal activities.
- A final campaign to haul wastewater to the site occurred during the following month. The new pit was not required to manage this volume of waste.
- During a follow-up site visit in June, waste dumping by French Ltd was again observed by the TWQB inspector and the site was ordered closed.
- By early October of 1970 the waste pit had been more or less emptied and soil was being mixed with the residuals for closure.

The estimated waste volume received from January through June of 1970 (about 1,155,000 gallons) matches the volume contained in the temporary waste pit at a two foot depth. Assuming all of the waste received during July and August of 1969 was placed on the roadway, approximately 8 inches of liquids were applied. This is also a reasonable application amount for a two month period during summertime weather conditions in Texas. The wastewater and other hydrocarbon waste delivered to the site during the remainder of 1969 totals approximately one million gallons. If this amount of waste were used to fill the dynamite craters, with the remainder then spread uniformly over the contaminated soil areas, it would have resulted in a 2.5 inch application, also reasonable for overland flow of liquid waste discharges. This rough material balance appears, therefore, to reconcile the waste quantities and disposal techniques which likely occurred at the Turtle Bayou site.

2.4 The primary contaminants identified at the Turtle Bayou site during the remedial investigations could reasonably have been contributed by the identified sources

I have analyzed the extensive Turtle Bayou contamination data base, consisting of over 7000 soil and water analyses for many of the reported constituents. I first screened the database for infrequently detected compounds, defined as those detected less than five times or in less than one percent of the samples analyzed. Since, however, the chemical properties of specific compounds result in their partitioning in environmental media, I applied this test to both soil and water matrices. This screening eliminates data uncertainties which arise from:

- minor waste degradation or conversion products.
- possible agricultural chemicals historically used in the area.
- Laboratory identification errors.

While some of these compounds could possibly have been introduced by laboratory wastes entering a plant waste stream as suggested by Dr. Hairston, any such contamination cannot be linked to a specific plant process. The remaining contaminants fall into various general groups which are related to the sources identified in Section 2.3 as follows:

2.4.1 Chlorinated Compounds – Sixteen chlorinated organic compounds were identified at levels that exceed screening criteria. Two of these, vinyl chloride and 2-chloropropene are “fingerprint” indicators of Tenneco’s acetylene chlorination process for manufacturing VCM. During the time period that groundwater samples were analyzed for both of these compounds, 190 samples contained vinyl chloride. Of those samples, 180 or 95.9% also contained 2-chloropropene, identifying Tenneco’s low pressure acetylene process as the source. Acetylene is an extremely reactive compound, however, and all of the other significant chlorinated compounds identified at the site are potential reaction byproducts of acetylene chlorination. In fact, some of those compounds must have been present in substantial concentrations in Tenneco’s waste for it to have exhibited the reported density of 10 lb/gallon (the densities of vinyl chloride and 2-chloropropene are 7.6 and 8.0 lb/gallon respectively). It is, therefore, reasonable to conclude that the chlorinated compounds present at the Turtle Bayou site could all have been contributed by the Tenneco waste.

2.4.2 tert-Butyl Alcohol (TBA) and Related Contaminants – As discussed in my December report, the TBA found at the site is a fingerprint constituent of the Oxirane Bayport plant. Although TBA is used in other processes, its high concentration and wide distribution at the Turtle Bayou site clearly points to the Oxirane TBA purification process as its source. Significant concentrations of molybdenum found at the site are also characteristic of TBA residues. The frequent detections of methyl tert-butyl ether (MTBE) likely resulted from disposal of Oxirane’s isobutylene rerun bottoms, since both methanol and isobutylene (the constituents used to manufacture MTBE) were present in the process. Acetone, isobutylene and MEK are also constituents of Oxirane’s waste found at the site.

2.4.3 Ketones – Methyl butyl ketone (2-hexanone), methyl isobutyl ketone and possibly MEK were constituents of the API separator skimmings from the Lyondell plant waste. Although the latter is much more water soluble and could have partitioned to the water phase, the other two ketones would have concentrated in the floating hydrocarbon layer.

2.4.4 Aromatic Hydrocarbons – Benzene, toluene, ethylbenzene and xylene (BTEX) as well as styrene are aromatic compounds frequently contained in hydrocarbon solvents and cracking process streams. API separator skimmings from Lyondell and slop oil from Sinclair-Koppers are likely sources of these waste constituents, especially since the Sinclair-Koppers plant produced styrene from a feedstock of aromatic hydrocarbons. Additionally, if any of Tenneco’s

“naphtha/methanol tails” were transported to the site, they would have contributed additional aromatic hydrocarbon constituents.

2.4.5 Polyaromatic Hydrocarbons (PAH) – PAH compounds are ubiquitous at waste disposal sites, to some extent because of their stability and low mobility in the environment. They are constituents of lube oils which were identified in several of the waste streams for the identified plants and are formed as residues in cracking processes. While the precise source of PAH contamination at the site cannot be identified, it is reasonable to expect these compounds to be present in the waste streams identified in the previous section.

3.0 Equitable Allocation of Response Costs

CERCLA liability extends to defined “persons”, including former owners and operators of a contaminated site at the time hazardous substances were disposed, current owners of the contaminated site, transporters of hazardous substances to the site and waste generators who arranged for the disposal of wastes at the site. For the Turtle Bayou site, the persons potentially liable under these classifications are:

Table 4
CERCLA Liable Persons

<u>Classification</u>	<u>“Person”</u>
Former Owners	Don Lang
	Adjacent Property Owners*
Former Operators	W.W. Smith
	French Ltd
Current Owners	Residents and other owners*
Transporters	French Ltd
Arrangers	Industrial Generators

*Property owners adjacent to Mr. Lang’s property onto which waste was dumped as well as the current residents and property owners are likely accorded the “innocent landowner defense” under CERCLA and would not be judged liable.

In passing the CERCLA legislation, Congress provided that in contribution claims “the Court may allocate response costs among liable parties using such equitable factors as the court determines are appropriate.” Many factors have been applied in CERCLA cost allocations, depending upon the specific circumstances of the site and the relationship of potentially responsible parties to the harm identified. The number of factors utilized for allocation is not critical, and courts have considered several, or in many cases, only one factor. The goal of the process is to achieve a fair and just result, which must be determined on a case-by-case basis.

A reasonable allocation framework applicable in this case is that developed by the EPA in their guidelines for preparing non-binding preliminary allocations of responsibility (NBARs). The factors considered in that guidance are:

- the volume, toxicity and mobility of the hazardous substances involved;
- the strength of the evidence tracing waste constituents to the potentially responsible parties;
- the ability of the potentially responsible party to pay; and
- the public interest.

My understanding is that Mr. Smith and the estate of Mr. Lang settled their responsibilities for the site with the Government, presumably based in part on their financial capacities. I have not attempted to evaluate the liability of successor parties to French Ltd. as part of this allocation analysis. The remaining parties in this litigation are the "arranger" parties which cannot be differentiated regarding ability to pay or their relationship to the public interest. A threshold factor in this case, however, is the strength of the evidence tracing waste constituents to each of these parties.

In the earlier contribution action brought by the EPA, several potentially responsible parties (PRPs) were named. After testing the veracity of the truck driver testimony linking PRPs to the Turtle Bayou site, however, all were dismissed except for the ARCO Chemical Co. defendants. When additional contamination was subsequently identified and the "site" definition expanded, the only PRP named by the EPA was EPEC, the successor company to the Tenneco VCM plant. Although in a CERCLA action the EPA is free to name any PRP or group of PRPs it sees fit, the history of the EPA litigation surrounding this site indicates that the best evidence of arranger liability falls on the Tenneco and ARCO related companies.

In the present litigation, Plaintiffs have named 31 corporate entities alleged to have generated wastes disposed at the Turtle Bayou site from 1969 through approximately 1979. Several waste transporters are also named as persons responsible for delivering the waste to the site. The evidence of waste disposal at the site, however meager, does not suggest waste disposal at the site past 1970, nor by transporters other than French Ltd. Those facilities alleged to have contributed hazardous substances to the site from 1971 to 1979 should, therefore, be dismissed from this litigation.

It cannot be conclusively proven that other waste generators who operated plants in southeast Texas during 1969 and 1970 and who contracted with French Ltd for off-site waste disposal during that period **did not** contribute a hazardous substance to the site. Should the Court determine that this inability to "prove the negative" subjects these defendants to liability for contribution, an equitable allocation based upon strength of the evidence is warranted. Equitable weighting factors in any such allocation could include:

3.1 Documentary Evidence Weighting

Shipping document evidence of waste disposal at the Turtle Bayou site has been identified only for the Tenneco and Sinclair-Koppers plants. Although it seems clear that much more waste was delivered to the site than is represented by those documents, they provide the strongest evidence of disposal.

3.2 Deposition Testimony Weighting

Although time has blurred the memory of the participants in waste disposal activities at the site, Mr. Smith and Mr. Bruce are the most likely to contribute credible testimony of the site operational history. Their deposition testimony demonstrates that waste disposal at the site was of short duration, that French Ltd was the only waste

transporter serving the site and that Oxirane was the primary generator of waste disposed there.

3.3 Chemical Evidence Weighting

Hazardous substances found at the site during various environmental investigations include "fingerprints" of wastes generated by Tenneco, Oxirane, Lyondell and Sinclair-Koppers during the relevant time period. Other more ubiquitous chemical compounds are also present, which could have been generated by virtually every company operating in southeast Texas. The presence of these non-unique substances, absent other evidence correlating those substances to specific waste generators, is not sufficient to impose arranger liability due to their presence.

Consequently, based upon the strength of the evidence in this matter, Oxirane, Lyondell, Sinclair-Koppers (ARCO related companies) and EPAC (successor to Tenneco) are the only arrangers which can receive weighting under the above factors. Waste volume, toxicity and mobility considerations of any differentiable constituents could also be applied in developing an allocation among those plants. Under the concept of relative fault for the harm caused at the site, any alleged arranger Defendants found liable in this litigation should equitably be accorded only *deminimus* responsibility, if any at all.

IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
BEAUMONT DIVISION

LYONDELL CHEMICAL COMPANY, §
and ATLANTIC RICHFIELD COMPANY, §
Plaintiffs, §

VS. §

ALBEMARLE CORP., et al. §
Defendants. §

NO. 1:01CV890

Consolidated with 01:02CV003
and 01:03CV00225

JUDGE HOWELL COBB

**DEFENDANT AK STEEL CORPORATION'S
DISCLOSURE OF EXPERT WITNESSES**

Defendants AK Steel Corporation hereby designates the following expert witnesses pursuant to the Agreed Third Amended Scheduling Order:

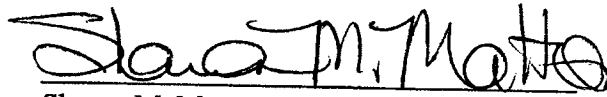
1. William B. Chadick
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(713) 357-1000

Mr. Chadick will testify regarding the allocation of the percentage of responsibility of the parties, including but not limited to AK Steel Corporation, in this litigation. Mr. Chadick's opinions and the basis for those opinions will be contained in his expert report, which will be filed pursuant to the Agreed Third Amended Scheduling Order. A copy of Mr. Chadick's curriculum vitae is attached as Exhibit A.

2. All persons designated as experts by any other party in this litigation.

AK Steel Corporation reserves the right to elicit opinion testimony from expert witnesses designated by any other party in this litigation.

Respectfully submitted,



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CERTIFICATE OF SERVICE

I certify that a true and correct copy of Defendant AK Steel Corporation's Disclosure of Expert Witnesses was served upon the following counsel of record on this the 19th day of December, 2003, via United States Mail and/or facsimile:

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A handwritten signature in black ink, appearing to read 'K. W. Lapeze', is written over a horizontal line.

Keith W. Lapeze

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IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
BEAUMONT DIVISION

LYONDELL CHEMICAL COMPANY, §
and ATLANTIC RICHFIELD COMPANY, §
Plaintiffs, §

VS. §

ALBEMARLE CORP., et al. §
Defendants. §

NO. 1:01CV890

Consolidated with 01:02CV003
and 01:03CV00225

JUDGE HOWELL COBB

**DEFENDANT BAYER CROPSCIENCE, INC.'S
DISCLOSURE OF EXPERT WITNESSES**

Defendant Bayer CropScience, Inc. hereby designates the following expert witnesses pursuant to the Agreed Third Amended Scheduling Order:

1. William B. Chadick
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(713) 357-1000

Mr. Chadick will testify regarding the allocation of the percentage of responsibility of the parties, including but not limited to Bayer CropScience, Inc., in this litigation. Mr. Chadick's opinions and the basis for those opinions will be contained in his expert report, which will be filed pursuant to the Agreed Third Amended Scheduling Order. A copy of Mr. Chadick's curriculum vitae is attached as Exhibit A.


2. Jess A. McAngus, P.E., Q.E.P.
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Mr. McAngus will testify regarding the allocation of the percentage of responsibility of the parties, including but not limited to Bayer CropScience, Inc., in this litigation. Mr. McAngus's opinions and the basis for those opinions will be contained in his expert report, which will be filed pursuant to the Agreed Third Amended Scheduling Order. A copy of Mr. McAngus's curriculum vitae is attached as Exhibit B.

3. All persons designated as experts by any other party in this litigation.

Bayer CropScience, Inc. reserves the right to elicit opinion testimony from expert witnesses designated by any other party in this litigation.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Sharon M. Mattox", with a horizontal line drawn underneath the signature.

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CERTIFICATE OF SERVICE

I certify that a true and correct copy of Defendant Bayer CropScience, Inc.'s Disclosure of Expert Witnesses was served upon the following counsel of record on this the 19th day of December, 2003, via United States Mail and/or facsimile:

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**Plaintiffs, Lyondell Chemical Company
and Atlantic Richfield Company**
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**Defendants, Albemarle Corporation,
Ethyl Corporation, E.I. duPont de
Nemours and Company, Celanese Ltd. as
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Celanese Corporation**
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**Defendants, Carpenter Chemical
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Hercules Incorporated**
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Defendants El Paso Tennessee Pipeline Company, EPEC Corporation, EPEC Polymers, Inc., and Tennessee Gas Pipeline Company

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Kimberly Lesniak

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Defendant, The Goodyear Tire & Rubber Company

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Defendant, Exxon Mobil Corporation

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Defendant, Team, Inc.

Charles E. Frost, Jr.

Chamberlain Hrdlicka White Williams
& Martin

1200 Smith Street, Suite 1400

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Defendant, Huntsman Polymers Corporation (f/n/a Rexene Corporation)

Tom N. Kiehnhoff

Reaud Morgan & Quinn, Inc.

801 Laurel Street

P.O. Box 26005

Beaumont, TX 77720-6005

Defendant, Vacuum Tanks, Inc. & Third-Party Defendant, Southline Metal Products Company, Inc.

Eva Fromm O'Brien

Heather M. Corken

Fulbright & Jaworski L.L.P.

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Defendant, NL Industries

Marcus Martin

Highland Environmental Management, LLC

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James L. Ware

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Third Party Defendant, J. M. Huber Corporation

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Germer Gertz, L.L.P.
P. O. Box 4915
Beaumont, Texas 77704-4915

Third-Party Defendant Cook Composites and Polymers

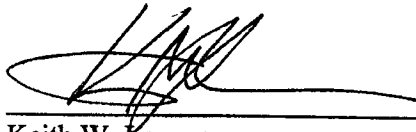
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Austin, Texas 78701



Keith W. Lapeze

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IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
BEAUMONT DIVISION

LYONDELL CHEMICAL COMPANY, §
and ATLANTIC RICHFIELD COMPANY, §
Plaintiffs, §

VS. §

ALBEMARLE CORP., et al. §
Defendants. §

NO. 1:01CV890

Consolidated with 01:02CV003
and 01:03CV00225

JUDGE HOWELL COBB

**DEFENDANT THE LUBRIZOL CORPORATION'S
DISCLOSURE OF EXPERT WITNESSES**

Defendant The Lubrizol Corporation hereby designates the following expert witnesses pursuant to the Agreed Third Amended Scheduling Order:

1. William B. Chadick
Pilko & Associates, LP
700 Louisiana, Suite 4500
Houston, TX 77002
(713) 357-1000

Mr. Chadick will testify regarding the allocation of the percentage of responsibility of the parties, including but not limited to The Lubrizol Corporation, in this litigation. Mr. Chadick's opinions and the basis for those opinions will be contained in his expert report, which will be filed pursuant to the Agreed Third Amended Scheduling Order. A copy of Mr. Chadick's curriculum vitae is attached as Exhibit A.

2. All persons designated as experts by any other party in this litigation.

The Lubrizol Corporation reserves the right to elicit opinion testimony from expert witnesses designated by any other party in this litigation.

Respectfully submitted,



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CERTIFICATE OF SERVICE

I certify that a true and correct copy of Defendant The Lubrizol Corporation's Disclosure of Expert Witnesses was served upon the following counsel of record on this the 19th day of December, 2003, via United States Mail and/or facsimile:

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Environmental and Natural Resources Div.
U. S. Department of Justice
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A handwritten signature in black ink, appearing to read 'K. Lapeze', is written over a horizontal line.

Keith W. Lapeze

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